

TRANSMITTAL LETTER TO THE UNITED STATES
DESIGNATED/ELECTED OFFICE (DO/EO/US)
CONCERNING A FILING UNDER 35 U.S.C. 371

APV31537

U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR

10/018057

PRIORITY DATE CLAIMED
June 18, 1999INTERNATIONAL APPLICATION NO.
PCT/AU00/00668INTERNATIONAL FILING DATE
June 16, 2000TITLE OF INVENTION
EDGE STRIP CAP

APPLICANT(S) FOR DO/EO/US

John CUTMORE
Reville Wayne ARMSTRONG

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (24) indicated below.
4. The US has been elected by the expiration of 19 months from the priority date (Article 31).
5. A copy of the International Application as filed (35 U.S.C. 371 (c) (2))
 - a. is attached hereto (required only if not communicated by the International Bureau).
 - b. has been communicated by the International Bureau.
 - c. is not required, as the application was filed in the United States Receiving Office (RO/US).
6. An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)).
 - a. is attached hereto.
 - b. has been previously submitted under 35 U.S.C. 154(d)(4).
7. Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371 (c)(3))
 - a. are attached hereto (required only if not communicated by the International Bureau).
 - b. have been communicated by the International Bureau.
 - c. have not been made; however, the time limit for making such amendments has NOT expired.
 - d. have not been made and will not be made.
8. An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. An oath or declaration of the inventor(s) (35 U.S.C. 371 (c)(4)).
10. An English language translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371 (c)(5)).
11. A copy of the International Preliminary Examination Report (PCT/IPEA/409).
12. A copy of the International Search Report (PCT/ISA/210).

Items 13 to 20 below concern document(s) or information included:

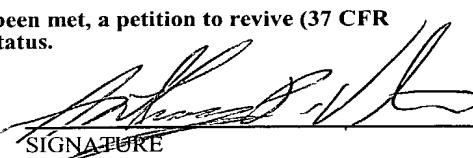
13. An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
14. An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
15. A **FIRST** preliminary amendment.
16. A **SECOND** or **SUBSEQUENT** preliminary amendment.
17. A substitute specification.
18. A change of power of attorney and/or address letter.
19. A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 35 U.S.C. 1.821 - 1.825.
20. A second copy of the published international application under 35 U.S.C. 154(d)(4).
21. A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4).
22. Certificate of Mailing by Express Mail
23. Other items or information:

Notice of Claim for Priority

PCT Request

Copy of the International Application as filed

U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR 10/018057	INTERNATIONAL APPLICATION NO. PCT/AU00/00668	ATTORNEY'S DOCKET NUMBER APV31537			
24. The following fees are submitted:		CALCULATIONS PTO USE ONLY			
BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)) :					
<input type="checkbox"/> Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO <input checked="" type="checkbox"/> International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO <input type="checkbox"/> International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO <input type="checkbox"/> International preliminary examination fee (37 CFR 1.482) paid to USPTO but all claims did not satisfy provisions of PCT Article 33(1)-(4) <input type="checkbox"/> International preliminary examination fee (37 CFR 1.482) paid to USPTO and all claims satisfied provisions of PCT Article 33(1)-(4)		\$1040.00			
<input checked="" type="checkbox"/> International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO <input type="checkbox"/> International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO <input type="checkbox"/> International preliminary examination fee (37 CFR 1.482) paid to USPTO but all claims did not satisfy provisions of PCT Article 33(1)-(4) <input type="checkbox"/> International preliminary examination fee (37 CFR 1.482) paid to USPTO and all claims satisfied provisions of PCT Article 33(1)-(4)		\$890.00			
<input type="checkbox"/> International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO <input type="checkbox"/> International preliminary examination fee (37 CFR 1.482) paid to USPTO but all claims did not satisfy provisions of PCT Article 33(1)-(4) <input type="checkbox"/> International preliminary examination fee (37 CFR 1.482) paid to USPTO and all claims satisfied provisions of PCT Article 33(1)-(4)		\$740.00			
<input type="checkbox"/> International preliminary examination fee (37 CFR 1.482) paid to USPTO but all claims did not satisfy provisions of PCT Article 33(1)-(4) <input type="checkbox"/> International preliminary examination fee (37 CFR 1.482) paid to USPTO and all claims satisfied provisions of PCT Article 33(1)-(4)		\$710.00			
<input type="checkbox"/> International preliminary examination fee (37 CFR 1.482) paid to USPTO and all claims satisfied provisions of PCT Article 33(1)-(4)		\$100.00			
ENTER APPROPRIATE BASIC FEE AMOUNT =		\$890.00			
Surcharge of \$130.00 for furnishing the oath or declaration later than months from the earliest claimed priority date (37 CFR 1.492 (e)).		<input type="checkbox"/> 20 <input type="checkbox"/> 30 \$0.00			
CLAIMS		NUMBER FILED	NUMBER EXTRA	RATE	
Total claims	11	- 20 =	0	x \$18.00 \$0.00	
Independent claims	2	- 3 =	0	x \$84.00 \$0.00	
Multiple Dependent Claims (check if applicable).		<input type="checkbox"/> \$0.00			
TOTAL OF ABOVE CALCULATIONS		= \$890.00			
<input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27). The fees indicated above are reduced by 1/2.		\$0.00			
SUBTOTAL		= \$890.00			
Processing fee of \$130.00 for furnishing the English translation later than months from the earliest claimed priority date (37 CFR 1.492 (f)).		<input type="checkbox"/> 20 <input type="checkbox"/> 30	+ \$0.00		
TOTAL NATIONAL FEE		= \$890.00			
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31) (check if applicable).		<input type="checkbox"/> \$0.00			
TOTAL FEES ENCLOSED		= \$890.00			
		Amount to be: refunded	\$		
		charged	\$		
a. <input checked="" type="checkbox"/> A check in the amount of \$890.00 to cover the above fees is enclosed.					
b. <input type="checkbox"/> Please charge my Deposit Account No. _____ in the amount of _____ to cover the above fees. A duplicate copy of this sheet is enclosed.					
c. <input checked="" type="checkbox"/> The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 19-4375 A duplicate copy of this sheet is enclosed.					
d. <input type="checkbox"/> Fees are to be charged to a credit card. WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.					
NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.					
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SIGNATURE**Anthony P. Venturino**

NAME

31,674

REGISTRATION NUMBER

Dec. 14, 2001
 THE APPLICANT HEREBWITH PETITIONS
 THE PTO TO EXTEND THE TIME FOR
 RESPONSE AS REQUIRED TO MAKE THE
 ATTACHED DOCUMENT TIMELY FILED.

Page 2 of 2
 PLEASE CHARGE THE COST THEREOF
 TO DEPOSIT ACCOUNT 19-4375

STEVEN DAVIS MILLER & MOSHER, L.L.P.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application

John CUTMORE et al

Serial No.: To be assigned (National Phase of PCT/AU00/00668
filed June 16, 2000)

Filed: December 14, 2001

For: EDGE STRIP CAP

PRELIMINARY AMENDMENT

Honorable Commissioner of
Patents and Trademarks
Washington, D.C. 20231

Sir:

Prior to the calculation of the filing fee, please amend the above-identified application as follows:

IN THE ABSTRACT

After the last page of claims, insert on a new page the Abstract shown on the attached sheet (ATTACHMENT I).

IN THE CLAIMS

Please amend the claims as follows. A copy of the claims marked up to show the amendments is attached (Attachment II).

3. (Amended) An edge strip as claimed in claim 1 wherein each support member is integrally formed with a respective edge strip.

4. (Amended) An edge strip as claimed in claim 1 further comprising an end cap at its lower end, at least one support member extending longitudinally in the channel from the end cap.

6. (Amended) A cathode plate comprising a metal plate portion for deposition of metal with an edge strip as defined in claim 1 on either longitudinal edge adapted to support the cathode plate from both sides.

7. (Amended) A cathode plate comprising a metal portion for deposition of metal and two edge strips extending along longitudinal edge portions of the metal plate, each strip having a longitudinally extending channel receiving an edge portion of the cathode plate and a tab extending longitudinally in said channel from said lower end and adapted to mate with a complementary recess formed in a respective end corner of the cathode plate, each said recess defining a discrete bottom edge portion concealed within the edge strip and spaced apart from an exposed bottom edge of the plate thereby to minimize metal deposition on the concealed bottom edge portion.

8. (Amended) A cathode plate as claimed in claim 7 wherein the tab extending longitudinally in said channel performs a dual function, firstly as the support member and secondly to minimize electrolyte migration to and metal deposition on the bottom edge portion concealed within the edge strip.

9. (Amended) A cathode plate as claimed in claim 7 wherein each tab is integrally formed with a respective edge strip.

10. (Amended) A cathode plate as claimed claim 7 further comprising end caps at the lower end edge of each edge strip, the tab extending longitudinally in the channel from the end cap.

Please cancel claims 12 and 13 without prejudice or disclaimer.

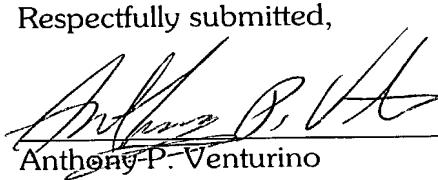
REMARKS

Claims 1-11 are pending. The claims have been amended to delete the multiple dependent claim status, improve readability, and cancel claims 12 and 13. No new matter is presented by the above amendments. Early and favorable consideration of this application is respectfully requested.

Respectfully submitted,

Date: Dec. 14, 2001

By:



Anthony P. Venturino
Registration No. 31,674

APV/pgw
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ATTACHMENT I

Abstract

An edge strip (10) for a cathode plate (100). The edge strip defines a longitudinally extending channel (20) for receiving the cathode plate (100). A support member or tab (50) is also provided in the edge strip and adapted to mate with a complementary recess formed in the lower end corners of the cathode plate (100). The support member or tab (50) can provide two functions. Firstly, the support member provides a shoulder portion (55) adapted to abut the complementary surface (120) of the cathode plate and thereby support the cathode plate in the edge strip. Alternatively, or in addition, the bottom edge portion (120) concealed within the edge strip (10) is spaced apart from the exposed bottom edge (140) of the plate. This minimizes metal deposition on the concealed bottom edge portion (120).

ATTACHMENT II

Marked up Claims

CLAIMS

1. An edge strip for a cathode plate, said strip having a longitudinally extending channel for receiving an edge portion of the cathode plate and at least one support member in said channel, said support member providing a shoulder portion adapted to 5 abut a complementary surface of a cathode plate and thereby support the cathode plate in the edge strip.
2. An edge strip as claimed in claim 1 comprising a series of support members along its length.
3. An edge strip as claimed in claim 1 ~~or claim 2~~ wherein each support member is 10 integrally formed with a respective edge strip. *claim 1*
4. An edge strip as claimed in ~~any one of the preceding claims~~ further comprising an end cap at its lower end, at least one support member extending longitudinally in the channel from the end cap.
5. An edge strip as claimed in claim 4 wherein the support member and end cap are 15 of unitary construction.
6. A cathode plate comprising a metal plate portion for deposition of metal with an ⁱⁿ edge strip as defined ~~by any one of~~ claims ¹~~3~~ on either longitudinal edge adapted to support the cathode plate from both sides.
7. A cathode plate comprising a metal portion for deposition of metal and two edge 20 strips extending along longitudinal edge portions of the metal plate, each strip having a longitudinally extending channel receiving an edge portion of the cathode plate and a tab extending longitudinally in said channel from said lower end and adapted to mate with a complementary recess formed in a respective end corner of the cathode plate, each said recess defining a discrete bottom edge portion concealed within the edge strip and

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spaced apart from an exposed bottom edge of the plate thereby to minimise metal deposition on the concealed bottom edge portion.

8. A cathode plate as claimed in any one of the preceding claims wherein the tab extending longitudinally in said channel performs a dual function, firstly as the support member and secondly to minimise electrolyte migration to and metal deposition on the bottom edge portion concealed within the edge strip.

9. A cathode plate as claimed in claim 7 or claim 8 wherein each tab is integrally formed with a respective edge strip.

10. A cathode plate as claimed in any one of claims 7 to 9 further comprising end caps at the lower end edge of each edge strip, the tab extending longitudinally in the channel from the end cap.

11. A cathode plate as claimed in claim 10 wherein the tab and end cap are of unitary construction.

12. An edge strip for a cathode plate substantially as herein described with reference to any one of the embodiments of the invention illustrated in the accompanying drawings and/or examples.

13. A cathode plate substantially as herein described with reference to any one of the embodiments of the invention illustrated in the accompanying drawings and/or examples.

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TITLE: EDGE STRIP CAP

TECHNICAL FIELD

The present invention relates to edge strips for cathodes as used in electro-refining metal.

5 BACKGROUND ART

The ISA process as developed by Mount Isa Mines and Copper Refineries Limited in Australia in which copper or other non-ferrous metals are deposited on stainless steel cathode plates is well-known. The electrolytically deposited metal is normally stripped from the cathode by first flexing the cathode to cause at least a part of the copper deposit 10 to separate from the cathode and by mechanical stripping or gas blasting, the sheet of deposited copper is released from the cathode.

Generally, deposition of metal on the edge portions of the plate is avoided since this renders the deposited metal more difficult to strip from the cathode plate. Edge strip protectors such as plastic strip mouldings, wax coating or a combination of both may be 15 used to avoid deposition of metal on the edge portions of the cathode plate. Generally, the longitudinal edges of the cathode plate are protected. Depending upon process requirements, the bottom end edge may be covered or left exposed. A typical example is shown in Figure 1. The cathode plate comprises stainless steel sheet 14 welded along its upper surface to hanger bar 11. On each longitudinal edge portion, an edge strip 18 is 20 provided to prevent metal deposition along the longitudinal edges of the cathode.

There have been many previously proposed edge strip configurations and methods of connecting these edge strips to the cathode plates. Some edge strips are chemically bonded to the plate, while others are mechanically attached for example by a series of pins running transversely through the edge strip and cathode plates.

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Chemical bonding is not always reliable and can tend to break down on exposure to the electrolyte solution and heat. Mechanical bonding is both expensive and time consuming to install. Regular maintenance and reinstallation is also required after several cycles of depositing, flexing and stripping of the plates.

5 Australian patent application no. 15464/99 discloses a two-piece edge protector strip for a cathode plate. This protector strip has a first channel member of relatively resilient material such as rubber. This channel member is wrapped around the edge portions of the cathode plate and then forced into a second channel member which in turn grips and holds both the first channel member and the corresponding edge portions 10 of the cathode plate together. While this arrangement is useful in that it does not require additional chemical or mechanical bonding, certain difficulties have still arisen with this technology.

Generally, edge strips extend to or below the bottom end edges of the respective cathode plate. Accordingly, in use, any force applied to the bottom of the cathode 15 plate/edge strip arrangement is transmitted to the edge strips and tends to shear or at least move the edge strips relative to the cathode plate. Any such movement or damage of the edge strip can be extremely detrimental to the process. In particular, it is both costly and time consuming to replace or reposition the edge strip protectors.

Another disadvantage of the prior art arises from the deposition of metal on that 20 portion of the cathode plate held within the edge strip. It is intended to provide a close fit in the edge strip to prevent substantial ingress of electrolyte but more particularly to prevent deposition of metal in this region. If metal is deposited on that portion of the cathode plate held by the edge strip, such deposition of metal may force open and detach the edge strip from the cathode plate.

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A number of techniques have been used in an effort to prevent such deposition of metal on the edge portions of the cathode plate. These include resilient collars on the edge strips or filling the edge strips with suitable sealant such as silicone.

Most of these techniques have now become obsolete by providing closer tolerances 5 between the edge strip and the cathode plate. However, a perennial problem remains, which is the growth of the deposited metal on the exposed lower end portion of the edge of the cathode plate received in the edge strip.

As mentioned above, the edge strips terminate at or slightly above the bottom end 10 edge of the cathode plate. The bottom end edge of the cathode plate held in the edge strip, however, is exposed to electrolyte and metal may freely deposit along this bottom end edge. Generally this does not cause structural failure of the edge strip. However, once the metal is stripped from the cathode these additional deposits or "dags" remain on 15 the stripped metal, providing an unattractive product. In severe cases these deposits act to bridge the metal sheets stripped from either side of the cathode plate, making their separation more difficult.

Various mechanisms have been proposed in sealing of this end edge of the cathode plate including end caps, filling the end portion with silicone sealant or indeed covering the entire bottom end edge with an edge strip protector. Each of these methods, however, have only proved to be partially successful.

20 It is an object of the present invention to overcome or ameliorate one or more of the disadvantages of the prior art, or at least to provide a useful alternative.

DISCLOSURE OF THE INVENTION

Accordingly, in a first aspect, the present invention provides an edge strip for a cathode plate, said strip having a longitudinally extending channel for receiving an edge

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portion of the cathode plate and at least one support member in said channel, said support member providing a shoulder portion adapted to abut a complementary surface of a cathode plate and thereby support the cathode plate in the edge strip.

In a second aspect, the present invention provides a cathode plate comprising a 5 metal portion for deposition of metal and two edge strips extending along longitudinal edge portions of the metal plate, each strip having a longitudinally extending channel for receiving an edge portion of the cathode plate and a tab extending longitudinally in said channel from said lower end and adapted to mate with a complementary recess formed in a respective end corner of the cathode plate, each said recess defining a discrete bottom 10 edge portion concealed within the edge strip and spaced apart from an exposed bottom edge of the plate thereby to minimise metal deposition on the concealed bottom edge portion.

In a particularly preferred embodiment, the tab extending longitudinally in said channel performs a dual function, firstly as the support member and secondly to 15 minimise electrolyte migration to and minimise metal deposition on the bottom edge portion concealed within the edge strip.

In another embodiment, the edge strip may include a series of support members/tabs along its length. These support members/tabs may be provided as separate pieces or formed integrally with the edge strip.

20 In yet another embodiment, the edge strip may include an end cap at its lower end with the support member/tab extending longitudinally in the channel from the end cap.

Apart from the aforementioned support member/tab arrangement, the remainder of the edge strip can be of any conventional construction. The invention is suitable for use with single piece edge strips which may include additional chemical or mechanical

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fastening, or two piece type edge strips such as disclosed in Australian Patent Application No. 15464/99.

Unless the context clearly requires otherwise, throughout the description and the claims, the words 'comprise', 'comprising', and the like are to be construed in an 5 inclusive sense as opposed to an exclusive or exhaustive sense; that is to say, in the sense of "including, but not limited to".

BRIEF DESCRIPTION OF THE DRAWINGS

A preferred embodiment of the invention will now be described, by way of example only, with reference to the accompanying drawings in which:

10 Figure 1 is a front elevational view of a conventional cathode plate with edge strip(s).

Figure 2 is a perspective view of the separate components of the first embodiment of the present invention, and

Figure 3 is a side elevational view of the components of Figure 1 in situ.
15 MODE FOR CARRYING OUT THE INVENTION

Referring to the drawings, the present invention comprises edge strip 10 and tab or support member 50. The edge strip shown in Figure 2 is similar to that disclosed in Australian patent application no. 15464/99. It comprises a first relatively resilient channel member 15 adapted to be held within a channel 20 formed by second relatively 20 rigid channel member 25. An end cap 30 closes the end of channel 20 at the lower end of the edge strip.

The edge strip is adapted to receive edge portion 110 of cathode plate 100. The bottom end of edge portion 110 includes a recess or notch defining a support surface 120 and vertical surface 130.

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Tab member 50 is also adapted to be received in longitudinally extending channel 20. In the examples shown, tab member 50 is provided as a separate piece, however, it may be integrally formed with edge strip 10, end cap 30 or rigid channel member 25.

5 Tab member 50 provides a shoulder portion 55 adapted to support the cathode plate. As shown more clearly in Figure 3, in use the shoulder portion 55 abuts the support surface 120 of the cathode plate 100, thereby supporting the cathode plate in the edge strip. Of course as will be apparent to those skilled in the art, an identical edge strip may be provided on the opposite edge portion of the cathode plate such that it is
10 supported on both sides.

Unlike previously proposed chemical or mechanical bonded edge strips, any force applied to the edge strip eg by dropping the cathode plate/edge strip arrangement, is transmitted from the edge strip via tab 50 to the cathode plate 100. All reaction force is thereby directed through tab 50 to the mother plate and accordingly relative movement
15 in the longitudinal direction between edge strip 10 and cathode plate 100 is eliminated or at least reduced. This is a significant advantage over and above the prior art systems which required chemical bonding or mechanical bonding by pins etc which could shear if a significant force was applied.

In this embodiment, only one tab/support member 50 is shown. It would be
20 appreciated by persons skilled in the art, however, that it may be desirable to have several tab/support members 50 to support the cathode plate 100 along the length of the edge strip.

Another advantage which arises from the embodiment shown in Figures 2 and 3 is the way metal is deposited in the lower region of the cathode plate. As discussed above,

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generally the bottom end edge of the cathode plate 100 extends along the entire width of the plate. In this instance, however, a notch or recess formed at the bottom end edges such that the bottom edge 120 of the edge portion 110 which is concealed with the edge strip 10, of the cathode plate is spaced from the exposed bottom edge 140 of the cathode plate. This spacing of edge 120 from edge 140 is significant in that it increases the resistance to deposition of metal such that metal will generally preferentially deposit on the exposed portions of the cathode plate including vertical edge 130 rather than depositing on edge 120. Since edge 130 is in the longitudinal direction it does not create as great a problem as growth in the lateral direction. Further, any metal deposited along edge 130 is in the direction of stripping ie the longitudinal direction of the plate.

Accordingly, it does not interfere with stripping of the metal sheets on either side of the cathode plate. As known to persons skilled in the art, the dags or additional growth along the bottom end edge of the plate can make separation of the sheets from either side of the cathode plate and from each other more difficult. In these respects it will be appreciated that the invention provides a practical and commercially significant improvement over the prior art.

It will be appreciated that variations can be made to the method and apparatus described without departing from the spirit or scope of the present invention.

CLAIMS

1. An edge strip for a cathode plate, said strip having a longitudinally extending channel for receiving an edge portion of the cathode plate and at least one support member in said channel, said support member providing a shoulder portion adapted to 5 abut a complementary surface of a cathode plate and thereby support the cathode plate in the edge strip.
2. An edge strip as claimed in claim 1 comprising a series of support members along its length.
3. An edge strip as claimed in claim 1 or claim 2 wherein each support member is 10 integrally formed with a respective edge strip.
4. An edge strip as claimed in any one of the preceding claims further comprising an end cap at its lower end, at least one support member extending longitudinally in the channel from the end cap.
5. An edge strip as claimed in claim 4 wherein the support member and end cap are 15 of unitary construction.
6. A cathode plate comprising a metal plate portion for deposition of metal with an edge strip as defined by any one of claims 1-3 on either longitudinal edge adapted to support the cathode plate from both sides.
7. A cathode plate comprising a metal portion for deposition of metal and two edge 20 strips extending along longitudinal edge portions of the metal plate, each strip having a longitudinally extending channel receiving an edge portion of the cathode plate and a tab extending longitudinally in said channel from said lower end and adapted to mate with a complementary recess formed in a respective end corner of the cathode plate, each said recess defining a discrete bottom edge portion concealed within the edge strip and

spaced apart from an exposed bottom edge of the plate thereby to minimise metal deposition on the concealed bottom edge portion.

8. A cathode plate as claimed in any one of the preceding claims wherein the tab extending longitudinally in said channel performs a dual function, firstly as the support member and secondly to minimise electrolyte migration to and metal deposition on the bottom edge portion concealed within the edge strip.

9. A cathode plate as claimed in claim 7 or claim 8 wherein each tab is integrally formed with a respective edge strip.

10. A cathode plate as claimed in any one of claims 7 to 9 further comprising end caps at the lower end edge of each edge strip, the tab extending longitudinally in the channel from the end cap.

11. A cathode plate as claimed in claim 10 wherein the tab and end cap are of unitary construction.

12. An edge strip for a cathode plate substantially as herein described with reference to any one of the embodiments of the invention illustrated in the accompanying drawings and/or examples.

13. A cathode plate substantially as herein described with reference to any one of the embodiments of the invention illustrated in the accompanying drawings and/or examples.

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(72) Inventors; and

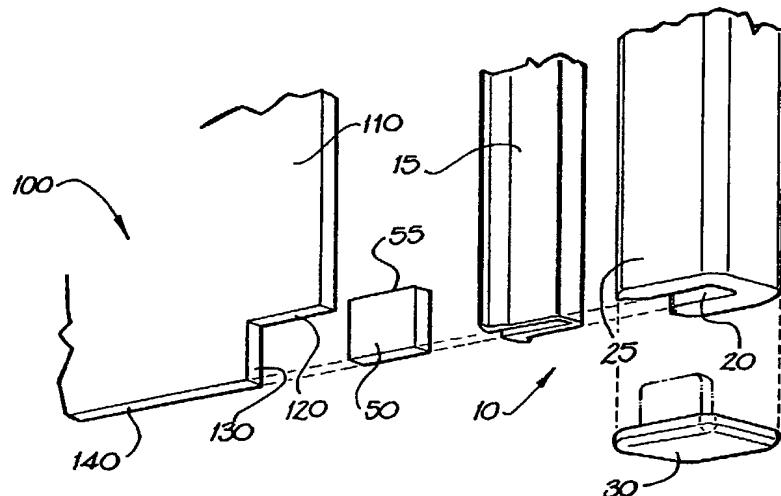
(75) Inventors/Applicants (for US only): CUTMORE, John [AU/AU]; 411 Lake McDonald Drive, Cooroy, QLD 4563 (AU). ARMSTRONG, Revill, Wayne [AU/AU]; 5 Wistaria Court, Annandale, QLD 4814 (AU).

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— With international search report.

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.



(57) Abstract: An edge strip (10) for a cathode plate (100). The edge strip defines a longitudinally extending channel (20) for receiving the cathode plate (100). A support member or tab (50) is also provided in the edge strip and adapted to mate with a complementary recess formed in the lower end corners of the cathode plate (100). The support member or tab (50) can provide two functions. Firstly, the support member provides a shoulder portion (55) adapted to abut the complementary surface (120) of the cathode plate and thereby support the cathode plate in the edge strip. Alternatively, or in addition, the bottom edge portion (120) concealed within the edge strip (10) is spaced apart from the exposed bottom edge (140) of the plate. This minimises metal deposition on the concealed bottom edge portion (120).

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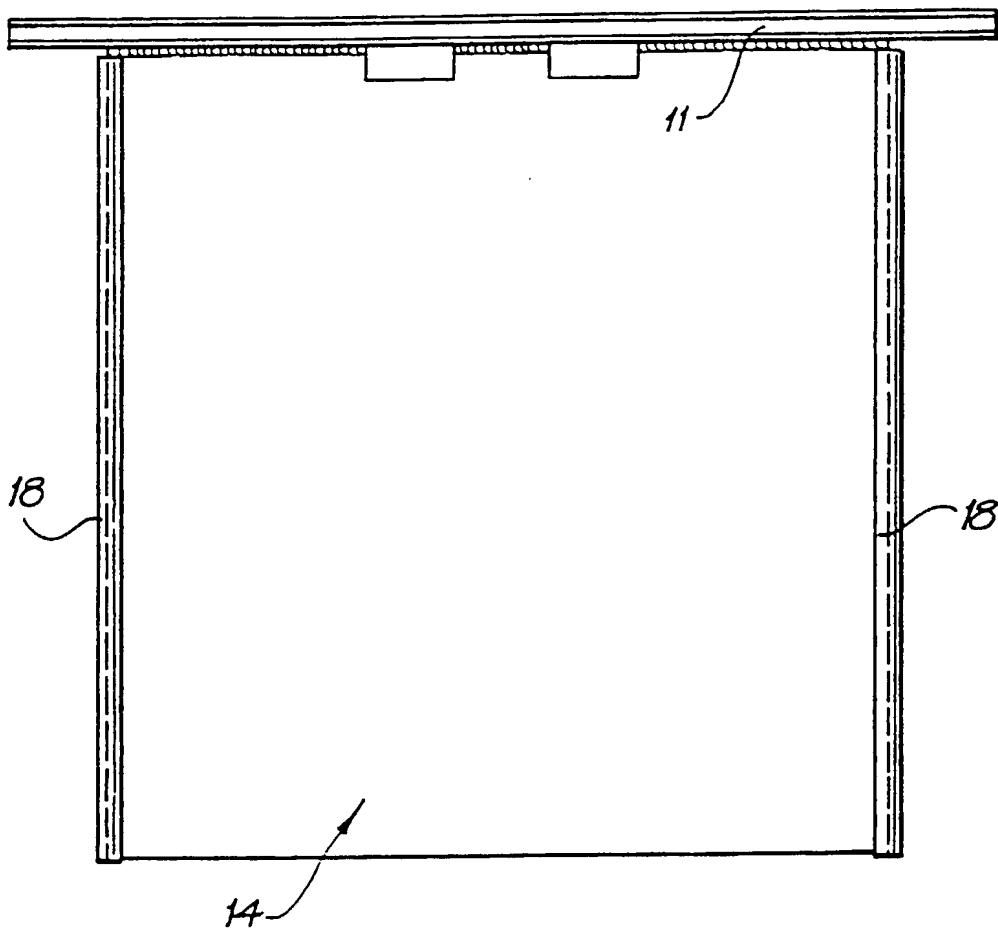


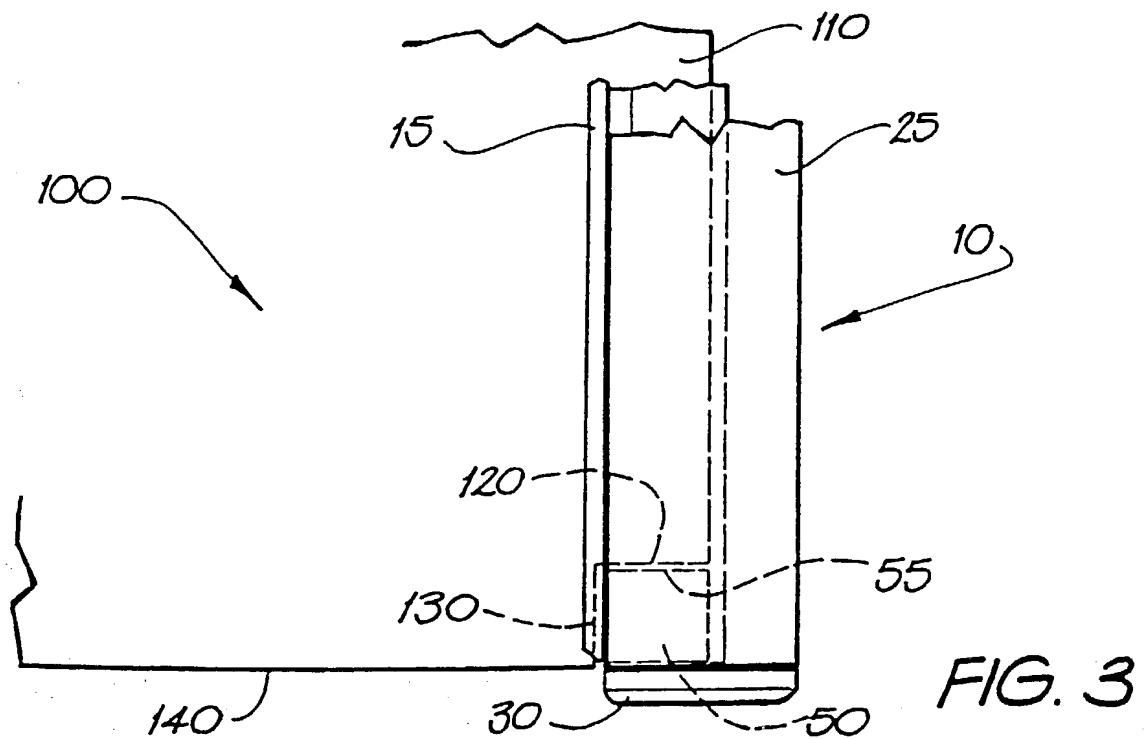
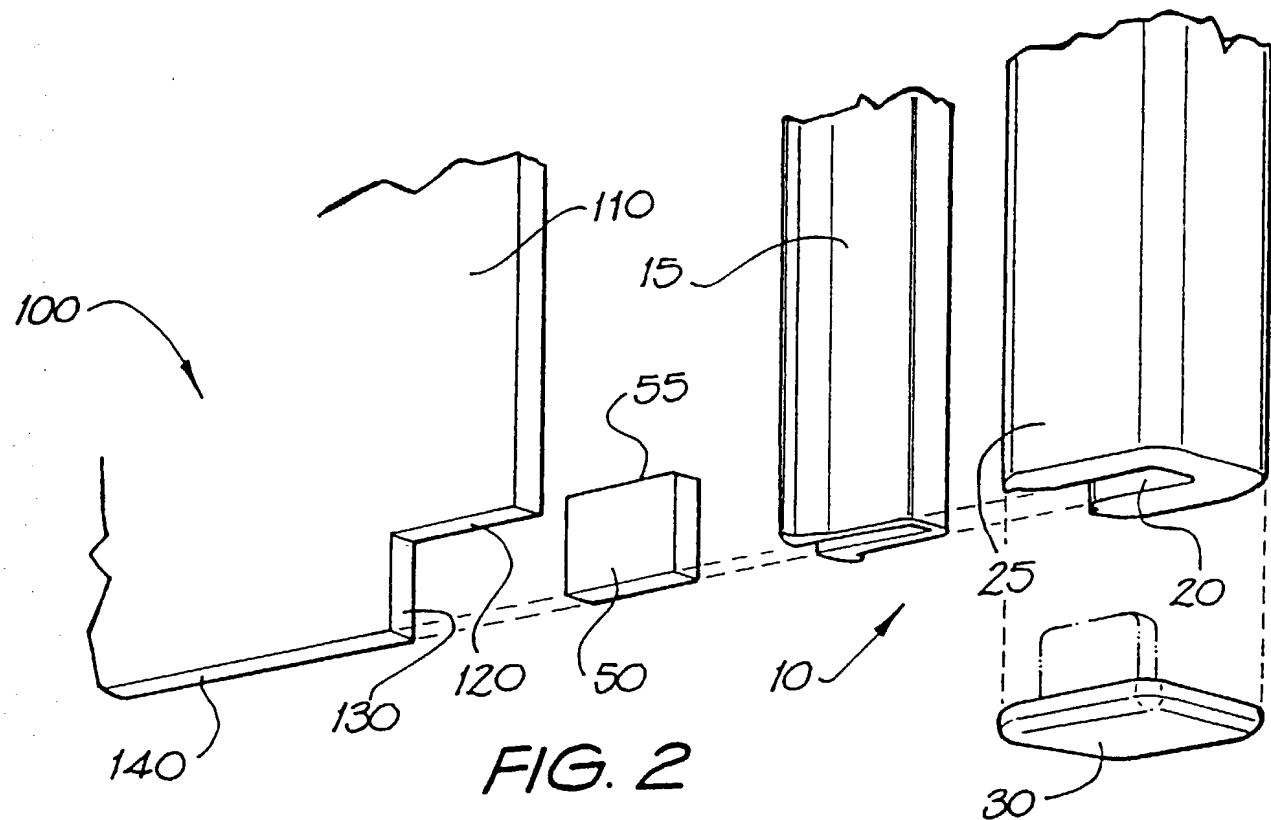
FIG. 1
PRIOR ART

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COMBINED DECLARATION AND POWER OF ATTORNEY FOR UTILITY PATENT APPLICATION (Includes PCT)	Attorney Docket No. APV31537
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As a below named inventor, I hereby declare that:
My residence, post office address and citizenship are as stated below next to my name,
that

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural inventors are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

EDGE STRIP CAP

the specification of which (check one)

is attached hereto.

was filed on _____ as Application Serial No. _____ and was amended on
_____. (if applicable)

was filed as PCT International Application No. PCT/AU00/00668 on June 16, 2000, and was filed in the U.S. National Stage on December 14, 2001 as U.S. Patent Application No. 10/018,057.

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, §1.56(a).

I do not know and do not believe the claimed invention was ever known or used in the United States of America before my or our invention thereof, or patented or described in any printed publication in any country before my or our invention thereof or more than one year prior to this application, that the same was not in public use or on sale in the United States of America more than one year prior to this application, that the invention has not been patented or made the subject of an inventor's certificate issued before the date of this application in any country foreign to the United States of America on an application filed by me or my legal representatives or assigns more than twelve months prior to this application.

I hereby claim foreign priority benefits under Title 35, United States Code §119 and/or §365(a)(b) of any foreign application(s) and United States provisional applications for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application(s) on which priority is claimed:

Prior Foreign and U.S. Provisional Application(s)			Priority Claimed	
PG 1068 (Number)	AUSTRALIA (Country)	18/06/99 Day/Month/Year Filed	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
			<input type="checkbox"/> Yes	<input type="checkbox"/> No

I hereby claim the benefit under Title 35, United States Code, §120 and/or §365(c) of any United States application(s) or PCT international application(s) designating the United States of America listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior application(s) in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

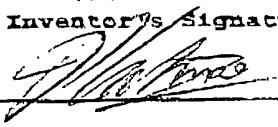
Application Serial No.	Filing Date	Status (patented, pending, abandoned)
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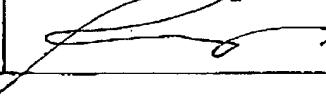
Application Serial No.	Filing Date	Status (patented, pending, abandoned)
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I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith; Stevens, Davis, Miller & Mosher, L.L.P.; Anthony P. Venturino, Reg. No. 31,674; James E. Ledbetter, Reg. No. 28,732; and Thomas F. Pavalko, Reg. No. 31,689. Direct all telephone calls to telephone no. 202-785-0100 and faxes to 202-408-5200.

Address all correspondence to 1615 L Street, N.W., Suite 850, Washington, D.C. 20036.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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